

LAMPIRAN

1. Source Code *Traffic Light*

```
const int pinMerah1 = 9;
const int pinKuning1 = 10;
const int pinHijau1 = 11;
const int pinMerah2 = 6;
const int pinKuning2 = 7;
const int pinHijau2 = 8;
const int pinMerah3 = 3;
const int pinKuning3 = 4;
const int pinHijau3 = 5;
int speakerPin = 12;
int length = 13;

char notes [] = {"ccc"};

int beats [] = { 2,5,10};
int tempo = 100;

void playTone(int tone, int duration) {
    for (long i = 0; i < duration * 1000L; i +=
tone * 2) {
        digitalWrite(speakerPin, HIGH);
        delayMicroseconds(tone);
        digitalWrite(speakerPin, LOW);
        delayMicroseconds(tone);
    }
}

void playNote(char note, int duration) {
    char names[] = { 'c', 'd', 'e', 'f', 'g', 'a',
'b', 'C' };
    int tones[] = { 10000, 1700, 1519, 1432,
1275, 1136, 1014, 9500 };
```

```
// play the tone corresponding to the note
name
for (int i = 0; i < 8; i++) {
    if (names[i] == note) {
        playTone(tones[i], duration);
    }
}
}

int counter;
void setup () {
pinMode (pinMerah1, OUTPUT);
pinMode (pinKuning1, OUTPUT);
pinMode (pinHijau1, OUTPUT);
pinMode (pinMerah2, OUTPUT);
pinMode (pinKuning2, OUTPUT);
pinMode (pinHijau2, OUTPUT);
pinMode (pinMerah3, OUTPUT);
pinMode (pinKuning3, OUTPUT);
pinMode (pinHijau3, OUTPUT);
pinMode (speakerPin, OUTPUT);

for(counter=0; counter < 10; counter++)
{
digitalWrite (pinMerah1, LOW);
digitalWrite (pinKuning1, HIGH);
digitalWrite (pinHijau1, LOW);
digitalWrite (pinMerah2, LOW);
digitalWrite (pinKuning2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinMerah3, LOW);
digitalWrite (pinKuning3, HIGH);
digitalWrite (pinHijau3, LOW);
delay(1000);

digitalWrite (pinMerah1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinHijau1, LOW);
digitalWrite (pinMerah2, LOW);
digitalWrite (pinKuning2, LOW);
```

```
digitalWrite (pinHijau2, LOW);
digitalWrite (pinMerah3, LOW);
digitalWrite (pinKuning3, LOW);
digitalWrite (pinHijau3, LOW);
delay(1000);

}

}

void loop () {
//TIANG A 1 HIJAU NYALA
digitalWrite (pinHijau1, HIGH);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, LOW);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (4000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }

    // pause between notes
    delay(tempo / 4);
}

//TING A KUNING NYALA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, HIGH);
digitalWrite (pinMerah1, LOW);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
```

```
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (1000);

//TIANG A MERAH SEMUA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (2000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }

    // pause between notes
    delay(tempo / 4);
}

//TIANG B HIJAU NYALA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, LOW);
digitalWrite (pinHijau2, HIGH);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (4000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
```

```
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }

    // pause between notes
    delay(tempo / 4);
}

//TIANG B KUNING NYALA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, LOW);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2,HIGH);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (1000);

//TIANG B MERAH SEMUA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (2000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }
}
```

```
// pause between notes
delay(tempo / 4);
}

//TIANG C HIJAU NYALA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, LOW);
digitalWrite (pinHijau3, HIGH);
digitalWrite (pinKuning3, LOW);
delay (4000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }

    // pause between notes
    delay(tempo / 4);
}

//TIANG C KUNING NYALA
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, LOW);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, HIGH);
delay (1000);

//TIANG C MERAH SEMUA
```

```
digitalWrite (pinHijau1, LOW);
digitalWrite (pinKuning1, LOW);
digitalWrite (pinMerah1, HIGH);
digitalWrite (pinMerah2, HIGH);
digitalWrite (pinHijau2, LOW);
digitalWrite (pinKuning2, LOW);
digitalWrite (pinMerah3, HIGH);
digitalWrite (pinHijau3, LOW);
digitalWrite (pinKuning3, LOW);
delay (2000);

for (int i = 0; i < length; i++) {
    if (notes[i] == ' ') {
        delay(beats[i] * tempo); // rest
    } else {
        playNote(notes[i], beats[i] * tempo);
    }

    // pause between notes
    delay(tempo / 4);
}
}
```

2. Tabel Spesifikasi Arduino Uno

Mikrokontroller	ATmega328
Tegangan Pengoperasian	5 Volt
Tegangan input yang disarankan	7-12 Volt
Batas tegangan input	6-20 Volt
Jumlah pin I/O digital	14 (6 diantaranya menyediakan keluaran PWM)
Jumlah pin input analog	6
Arus DC tiap pin I/O	40mA
Arus DC untuk pin 3.3 Volt	50 mA
Memori Flash	32 KB (ATmega328), sekitar 0.5 KB digunakan oleh bootloader
SRAM	2 KB (ATmega328)
EEPROM	1 KB (ATmega328)
Clock Speed	16 MHz

3. Gambar Fisik Arduino Uno

